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Computer-assisted language learning: Challenges in teaching multilingual and multicultural student populations

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Abstract

This paper reports on the integration of computer-assisted language learning (CALL) into courses of English for Academic Purposes at the Technion-IIT. CALL users include Hebrew and Arabic speakers, immigrants and international students having different educational backgrounds. To find an optimal combination of teacher-led and autonomous learning and make teaching more flexible we have developed CALL modules with interactive feedback. They consolidate material taught in class and target reading and aural comprehension skills, vocabulary and grammar. Moreover, these modules engage learners in content relevant to their majors and increase students' awareness of environmental and ethical problems linked to science and technology.

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1. Introduction

English has been firmly established as the lingua franca of science, and even B.A. students are confronted with the need to read and communicate extensively in English. At the Technion-Israel Institute of Technology, English is taught at undergraduate, graduate and post-graduate levels. Like other universities in Israel, the Technion caters to multilingual and multicultural student audiences. Besides Hebrew and Arabic speakers, they include immigrants from Ethiopia, France, Latin America, countries of the former Soviet Union and international students. Speaking various mother tongues, these learners have different educational backgrounds that targeted different language skills and shaped different learning styles. Many students combine studies and work. This and numerous obligations students have in their majors affect attendance of language classes and at times lead to poor preparedness. Moreover, language classes often reach the student-teacher ratio of 35-1, which prevents instructors from giving a fair share of attention to everyone in class. To shift the emphasis from teacher-centered to student-centered learning, we opted for a combination of teacher-led and autonomous learning as offered by blended, or hybrid courses. These terms are interchangeable in the pedagogical literature and denote learning in which face-to-face instruction is complemented by autonomous computer-based or online learning activities (Graham 2006). The purpose of this paper is to share experience of incorporating CALL programs in courses of English for Academic Purposes (EAP).

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2. CALL laboratory materials

The CALL laboratory has been functioning at the Technion since 1995 and offers programs in 9 languages: English, German, French, Hebrew, Japanese, Italian, Spanish, Arabic and Russian. The latter two languages are represented by commercially produced software, while programs in the other languages have been developed in-house. Except Hebrew taught to new immigrants and international students, and English studied by all students irrespective of their mother tongue, the rest of the languages are offered as elective courses. English is the only language in which both compulsory and elective courses are taught at all levels, from low-intermediate to advanced, therefore the majority of our CALL materials are in English.

Although today there is an abundance of online CALL materials, a vast majority of them target beginners and intermediate students of English as a foreign language. Moreover, while it is relatively easy to find web-based vocabulary and grammar exercises, most of them give limited feedback of the “correct/incorrect” type. Tutorials of this type are useful for rote drill and self-assessment, but do not help students understand the nature of their mistakes or provide explanations of how to correct them. Reading comprehension and multimedia modules for upper-intermediate and advanced students majoring in science and technology are still scarce. That is why we decided to develop our own modules that would be closely connected to the subject matter of the Technion EAP courses.

We opted for two tutoring systems. The first one, *WinCalis*, was developed at the Humanities Computing Laboratory at Duke University, specifically for foreign language learning, <http://www.humancomp.org/wincalis.htm> (last accessed 15/11/2011). The second one, *Hot Potatoes* was developed by Martin Holmes of the Victoria University, HCMC as a tool for a wide variety of courses and for speakers of languages that use Latin and other alphabets. <http://hotpot.uvic.ca/> (last accessed 15/11/2011). These tutoring systems have similar repertoires of exercise types: true/false and multiple choice questions, short answers, gap filling, matching and ordering. In addition, *Hot Potatoes* offers formats suitable for language games: crossword-puzzles and jumbled-sentences. Both systems can be integrated with audio and video, and *Hot Potatoes* with text-to-speech programs that are particularly useful for students who had insufficient exposure to spoken English at the previous stages of language learning and need practice in pronunciation and aural comprehension. These programs are also a valuable tool for students with learning difficulties and need audio support to facilitate reading comprehension.

The most valuable component of *WinCalis* and *Hot Potatoes* tutoring systems is the option of guided feedback which enables developers to clarify questions, explain mistakes, guide the student to the correct answer by asking additional questions, and refer the student to glossaries and rules which can be integrated into the module. Feedback can also clarify the meaning of words and phrases and point to contextual clues. Writing feedback is demanding and time consuming because for each task developers have to foresee a variety of potential mistakes. Yet, it is this component that makes CALL programs interactive and stimulates learners' autonomy.

WinCALIS 2.5 : C:\DOCUMENTS AND SETTINGS\2\DESKTOP\WASHA -+ JUDY REVIEW\APPLY - 1-2\APPLY 2

Lesson Options Tutorials Language: English/W.Europe Tools Help

In this exercise you will practice using different forms of the word **APPLY**.
First study the meaning/s of each form of this word.
Make Sure to press **ENTER** after each answer.

apply (v.)

- a. use something or make something work in a particular situation
- b. make a formal request, usually in writing, for a job, a place in college, etc.
- c. concern or relate to somebody or something
- d. put or spread something such as paint, cream, etc. onto a surface
- e. work at something or study something very hard

application (n.)

- a. the practical use of something
- b. a formal (often written) request or something, such as a job or a place at a college or university
- c. an act of putting or spreading something such as paint
- d. a computer program designed to do a particular job
- e. great effort

applicant (n.) a person who makes a formal request for something, such as a job or a grant

appliance (n.) a machine designed to do a particular thing in the home

applied (adj.) used in a practical way, not theoretical

6. The school receives many appliance _____ for entrance every year.

You need a different noun.
Think whether it has to be in the **singular** or in the **plural** if it is used after the adjective **many**.

Press space bar or click mouse here

start [taskbar icons] EN 13:05

Figure 1. A vocabulary exercise supplied with guided feedback

3. What language skills does CALL for EAP courses target?

Our approach to CALL is integrative (Warschauer 1996), seeking to develop reading, listening and writing. Computers are known to CALL researchers as an excellent medium for automating lower-level skills, such as vocabulary, grammatical structure and form needed for higher level skills (Ellis 1995). Some educators still believe that CALL's main goal is to provide rote drill (Scida & Saury 2006: 519), overlooking its potential for higher-level skills such as text analysis, listening comprehension and written communication. Although we do write tutorials enabling students to concentrate on the form, we always try to combine target skills. Thus our vocabulary tutorials focus on words from the Academic Word List which have high frequency in the academic discourse in all fields (Coxhead 2000), on key words from the passages read and discussed in face-to-face classes, and on words often confused, such as *do-make, rise-raise, lie-lay, affect - effect*, etc. In vocabulary acquisition special attention is given to derivation, synonymy and antonym. This approach enables students to enrich vocabulary in a systematic way and immerses them in the target language discouraging the detrimental practice of word-for-word translation. Vocabulary drills are combined with grammar. We give preference to those formats that make students think both about the use of contextually appropriate words and grammatically suitable forms. Grammar tutorials also contribute to the consolidation of lexical material. They expose students to the target vocabulary, thus reinforcing its retention. Besides offering tutorials in which a grammar item is presented in separate sentences, we emphasize vocabulary and

grammar in the context of complete texts, when students have to make decisions about the use of appropriate forms relying on contextual clues.

The texts and videos forming the basis of our multimedia modules are linguistically and intellectually challenging. In the choice of content we give preference to material dealing with cutting-edge technologies that inspire students' interest and can be used as a source of subsequent discussions in face-to-face classes. Besides, we focus on ecological and ethical issues related to science and technology. Moreover in choosing texts and videos for CALL modules, we try to adopt a "glocal" approach, by bringing to the students' attention ecological problems of the Red Sea, desalination techniques, greening the desert and other issues essential for the wellbeing of the Middle East.

The tasks presented to students when they work with texts and videos target in-depth understanding of the content, including authors' goals and intentions, consistency or contradictions in the argumentation, agreement or confrontation of opinions. These tasks require understanding of linguistic forms expressing modality, hypothesis vs. result/conclusion, and the ability to identify the strong component of contrasting groups. They also make learners pay attention to the difference between explicitly and implicitly expressed information, fact vs. non-fact, etc. All these elements of discourse can be classified as high-level text analysis, the skill needed for dealing with complex professional literature.

4. Combining face-to-face and CALL modes

Unlike many blended courses that emerged as university attempts to cut on face-to-face instruction and thus maximize resources (see, e.g., Chenoweth et al. 2006; Grgurović 2011; Scida and Saury 2006), we maintain the same number of contact hours (4 per week), but increase the amount of language practice through the CALL component. Students come to the CALL lab twice or three times a semester with the instructor and receive two assignments per semester which have to be completed in the CALL laboratory in free access hours. Therefore, in terms of *level of integration*, as conceptualized by Neumeier (2005), our English courses would be considered 'high', since the use of the CALL lab material is obligatory rather than optional. Supplementary material is available on all levels and on all skills, though, for further practice on an optional basis. Notably, teacher-learner roles interchange in an interesting pattern during class visits to the CALL lab: while teachers lead in the subject matter, it is the students who lead in technological issues, as they are usually much more sophisticated computer users and master new computer skills considerably faster than their instructors.

Each assignment for autonomous studies includes reading comprehension, grammar and vocabulary tutorials and multimedia modules. Reports on the completion of assignments have to be submitted by a specified date and affect the students' course grade. Autonomous work in the lab doesn't oblige students to spend a prescribed number of hours, yet the report brought to the instructor includes the amount of time spent in the lab. This helps teachers evaluate the average time needed for the activities offered and the time required by each student, which can serve as an indicator of his/her strengths and weaknesses. Notably, the option of recording the student's scores generated by programs was abandoned since we observed that it caused students' anxiety and thus could be detrimental for motivation. In the assignments for graduate students, however, the scores are still recorded, because more mature learners accept the explanation that this helps monitor one's own progress, and decide whether certain tutorials have to be repeated or similar ones done for additional practice.

Our grammar tutorials are supplied with explanations of rules, and vocabulary programs are provided with charts of word families. In addition, students can use glossaries written for specific texts and videos, as well as monolingual and bilingual online dictionaries. Some students bring to the CALL lab their course-books in order to consult the rules and notes made in class. Notably, the more conscientious learners add new ones, putting down what they learn in the CALL modules and tutorials. We also see many cases of team-work. Some students prefer to work in pairs, although each at his/her own terminal, discussing tasks and helping each other. Therefore, in terms of learner guidance operating in our blended courses we can distinguish three modes. In face-to-face learning taking place in a conventional classroom, the main source of guidance is the teacher. During class work in the lab, there are two sources of guidance - software and the teacher. During autonomous work in the lab, the sources of guidance are

software and other students in case of peer learning. According to our observations and the interviews we conducted, the use of various aids and collaborative learning helps students develop self-instruction strategies and promote their self-confidence as autonomous learners.



Figure 2. A vocabulary exercise accompanied by a helping screen

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